

**REMARKS**

This submission adds new claims 33-38.

Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Joannopoulos et al., U.S. Patent 5,955,749 (hereinafter "Joannopoulos"). Applicants respectfully traverse the rejection. The Examiner states "with respect to claim 1, the cover figure of the reference teaches a photonic crystal structure formed in layers 504, 506, and 508. Layer 504 is n-type (column 7, lines 50-54). The device is a light emitting device (abstract). It would have been obvious to fabricate the device in a III-nitride semiconductor, instead of GaAs, because III-nitride materials are well-known semiconductors, and because the materials have known advantages such as different refractive indexes that would allow optimization of the emitted light."

Claim 1 is amended to clarify "the p-type region is substantially planar and the photonic crystal structure does not extend into the p-type region." Such a structure is illustrated in Applicants' Fig. 5. In Joannopoulos' cover figure, the holes extend from p-type GaAs layer 508 into stratum 506 and n-type GaAs layer 504. See, for example, column 8 lines 9-12: "The layers 504, 508 and stratum 506 are configured with a periodic pattern of elements 510, shown in the illustrated embodiment as holes or channels positioned in a triangular lattice." It would not be obvious to modify Joannopoulos' Fig. 5 device such that the photonic crystal structure does not extend into the p-type region, since p-type layer 508 forms the top surface of the device and n-type layer 504 is buried within the device. The only techniques Applicants have found in Joannopoulos for forming a photonic crystal structure involve drilling or etching holes in an exposed surface of the device, specifically p-type layer 508 in Fig. 5. Joannopoulos does not teach or suggest forming a photonic crystal structure in a buried layer such as n-type layer 504, such that the photonic crystal structure does not

PATENT LAW  
GROUP LLP  
2635 N. FIRST ST.  
SUITE 220  
SAN JOSE, CA 95134  
(408) 382-0480  
FAX (408) 382-0481

extend into p-type layer 508. Joannopoulos thus does not anticipate or render obvious claim

1. Claims 2-7 depend from claim 1 and are thus allowable for at least the same reason.

Applicants thank the Examiner for allowing claims 8-32.

In view of the above arguments, Applicants respectfully request allowance of claims 1-38. Should the Examiner have any questions, she is invited to call the undersigned at (408) 382-0480.

Certification of Facsimile Transmission

I hereby certify that this paper is being facsimile transmitted to the U.S. Patent and Trademark Office on the date shown below.

R. Leiterman 10/27/04  
Signature Date

Respectfully submitted,

*R. Leiterman*

Rachel V. Leiterman  
Attorney for Applicants  
Reg. No. 46,868

PATENT LAW  
GROUP LLP  
2631 N. FIRST ST.  
SUITE 723  
SAN JOSE, CA 95134  
(408) 382-0480  
FAX (408) 382-0481

**This Page is Inserted by IFW Indexing and Scanning  
Operations and is not part of the Official Record**

## **BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ **BLACK BORDERS**
- ☐ **IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- ☐ **FADED TEXT OR DRAWING**
- ☐ **BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- ☐ **SKEWED/SLANTED IMAGES**
- ☐ **COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- ☐ **GRAY SCALE DOCUMENTS**
- ☐ **LINES OR MARKS ON ORIGINAL DOCUMENT**
- ☐ **REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- ☐ **OTHER:** \_\_\_\_\_

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.**